## A. SPECIFICATION AMENDMENTS

Please amend the specification as follows:

**Please replace the paragraph beginning at page 28, line 11, with the following rewritten paragraph:**

FIG. 109 shows the multi-hole workpiece first illustrated in FIG. 108, taken along line 109-109 of FIG. 108, [~~and~~] now further illustrating the use of indenters to create desirable residual stresses at locations for apertures through a workpiece, utilizing an anvil or other structure that provides a backing support to resist motion opposite the direction of motion of the indenter, so as to facilitate one sided processing of a workpiece.

**Please replace the paragraph beginning at page 29, line 1, with the following rewritten paragraph:**

FIG. 112 shows the multi-hole workpiece first illustrated in FIG. 108, taken along line 112-112 of FIG.111, [~~and~~] now further illustrating the use of an optional internal support device, such as an anvil or other metal structure that resists deformation along an internal free edge of the workpiece, normal to the direction of the indenter, as might otherwise result from processing locations for future holes with the indenters as shown, so as to facilitate one sided processing of a workpiece.

**Please replace the paragraph beginning at page 45 line 7, with the following rewritten paragraph:**

Also depicted in FIGS. 16 and 17 are some reference marks for analytical tools further revealed in FIGS. 38 through 43. It can be observed that workpiece 132' is actually three separate parts (sheets 132'(A), 132'(B), and 132'(C), as indicated by separation lines U and L). In FIGS. 38 through 43, further discussed below, the separation lines are used to modularly explode stress analysis diagrams of workpiece 132' into three components, representing sheets 132'(A), 132'(B) and 132'(C).

**Please replace the paragraph beginning at page 47 line 12 with the following rewritten paragraph:**

Both FIGS. 25 and 26 are partial cross-sectional views which illustrate the set-up step for a method of impacting both the obverse side 390 and the reverse side 392 workpiece 378 with indenters 370' and 372' which are both of different shape and of unequal size, or with indenters 370" and 372" which are both of similar shape and size, and where the indenters are centered by use of pilot guide tool 382 received in a centering receiving slot 384 or 384", respectively in at least one of the indenters. Also note that indenter 372' may have a beveled surface 376', and that indenter 370' may have a shaped surface 371'.

**Please replace the paragraph beginning at page 64 line 12, with the following rewritten paragraph:**

Attention is now directed to FIGS. 78 through 97, which show various steps for processing types of solid bars for improving the fatigue life of a hole therein, including normally but not necessarily a transverse hole therein. In FIG. 78, a first step shows the setup for processing the bar 2100 with indenters I78A and I78B. The

dotted or hidden line 2102 in FIG. 79 shows the outline of a proposed transverse hole. Opposing indenters are positioned over the desired location of the hole. The indenters I78A and I 78B have an end profile 2104 and 2106 for imparting optimized levels of beneficial residual stresses in workpiece 2100 necessary for fatigue life improvement. In a typical application the diameters of the indenters are smaller than the final diameter of the transverse hole defined by wall 2102. Additionally, the indenter I78A and I78B tooling is made from material that is higher in strength than the bar 2100 material. FIG. 79 shows the indenters acting on the bar 2100. The indenters are quasi-statically squeezed, actuated at a high velocity, or "excited" with a stress wave to impart dimples 2107 and 2109 of a prescribed depth to the bar 2100 (see FIG. 80). After indenting, the hole is machined out by drill of diameter D80 as shown in FIG. 80, removing the dimples left behind by the indenters. Alternate final cross sectional bar configurations are shown in FIGS. 81 and 82. The first configuration [[~~I~~]] FIG. 81 shows the bar with the transverse hole defined by edge wall 2110. The second configuration shown in FIG. 82 shows the bar 2100 with the same transverse hole 2110, but hollowed out for reduced weight or other function and thus having a longitudinal passageway defined by interior wall 2112. Even with a large portion of material removed there is sufficient residual compressive stress around the upper $2110_U$ and lower $2110_L$ portions of hole 2110 to provide fatigue life improvement. The method(s) disclosed herein are effective for bars under tensile, bending, torsional and combined loads. Configurations of this sort can be found on pipes, tubing, medical implants, bushings, crank shafts, drive shafts and the like.

**Please replace the paragraph beginning at page 72, line 24, with the following rewritten paragraph:**

In instances where appreciable deformation is not allowable, a support device may be used as shown in FIGS. 111, 112, 113, and 114. Any appropriately shaped support device, whether an internal support plug, a straight rail, an outer ring structure and like, can be used to resist the deformation at a free edge. FIG. 112 shows an internal support 3020 that has a lateral side 3021 that resists the internal free edge 3016 deformation from the one-sided treatment of a hole or pattern of holes near the edge. The internal support 3020 is configured with a flat bottom 3022 that engages a preferably complementary upper surface 3024 of the underlying support 3010. FIG. 112 shows one-sided treatment of a part using an internal support 3020, with indenters I112A and I112B acting on the obverse side 3016. FIG. 113 is similar to FIG. 112 except that the internal support 3020' having a lateral side 3021' is allowed to pass through a hole 3011 in the underlying support 3010. Indenters I113A and I113B act on workpiece 3000.

FIG. 114 is similar to FIG. 113 except that the internal support 3020' having a lateral side 3021' is allowed to pass through a hole 3011 in the underlying support 3010. This arrangement is helpful for high-volume applications where tools may be acting on both sides of the part, such as illustrated in FIG. 114. FIG. 114 shows two-sided treatment of a part using an internal support, with indenters I114A and I114B acting on the obverse side 3003, and indenters I114C and I114D acting on the reverse side 3005 of workpiece 3000. In each view, a support portion of the internal support 3020 (or 3020', as appropriate) matches the surface of the free edge 3016 of the part that it supports. The views show an edge that is perpendicular to the face of the part, but it should be understood a support can be made to match an angled, stepped, curved, grooved or other edge geometry.

**Please replace the paragraph beginning at page 75, line 22, with the following rewritten paragraph:**

Next, attention is directed to FIGS. 128 through 131, which show the treatment of a stackup 3400 of several layers 3400A, 3400B, and 3400C of metal. While the figures show three layers, the process could be applied to any number of layers, or, alternately, a thick single workpiece could be treated in like manner. The process set forth in these FIGS. 128 through 135 is a sequential one, using differing shapes and/or sizes of indenters and, as necessary, with varying end shapes on the indenters, as required to achieve the desired residual stress. The indenters are driven to a treatment depth, suitable for a specific layer or thickness, especially in the case of a large single piece. Sequential operation is substantially similar to that just illustrated for a thick single workpiece. Indenters I128A and I128B work at obverse 3401 and reverse 3403 sides of workpiece 3400. Dimple 3402 is formed, and then machined out. Likewise, from the bottom side, dimple 3412 is formed, and then machined out. Machining is preferably done with a flat bottom or milling device 3409 that can cut a substantially flat bottom hole. After machining first dimple [~~3204~~]3402, a first interior surface 3406 is provided, against which indenter I128A acts, forming second dimple 3408. If the fatigue enhancement profile is sufficient, then final drilling of the desired hole is performed. As indicated in FIG. 134, a final drill 3419 is used to complete the hole. The final drill 3419 is preferably of larger diameter than the earlier used bit 3409, shown in FIG 130. Thus, a final hole defined by interior sidewall 3420 is formed in workpiece 3400. Note that the final configuration of workpiece 3400 may include a countersink, step, or other such features as otherwise described herein. Also, note in FIGS. 129 and 130, for example, that in this embodiment, the indenters used in this method effectively eliminate surface upset,

as shown here with respect to obverse side 3401 of workpiece 3400, and thus the thickness of workpiece 3400 is not changed except at the location where the indenter has acted.

**Please replace the paragraph beginning at page 79, line 1, with the following rewritten paragraph:**

Finally, FIGS. 143 through 152 illustrate various aspects of alternate indenter shapes, and processing of selected workpieces with such shapes. In FIG. 143 another embodiment shows an optimized indenter I143 for use in creating desirable residual stress patterns in a workpiece to provide fatigue life improvement. In this embodiment, an indenter I143 a flat, centrally located portion 4200, a first chamfered portion 4210, and a curved blend portion 4220 are used to approximate a desirable and sufficiently effective curvature at the working end [~~I142~~]I143$_E$ of the indenter I143. The proportions and exact shapes for the flat portion 4200, first chamfer portion 4210, and curved portion 4220 depend on several variables including: physical properties of the workpiece material being treated, workpiece thickness, or stack thickness and number of layers, the hole diameter, depth of indenter penetration, and indenter material. The curved portion of the indenter may be described as a constant radius, or as a parabolic shape, or as an elliptical shape, or as a hyperbolic shape, or a spline shape, or any other shape that when combined with a flat portion and/or a chamfer portion approximates a uniform pressure profile sufficiently so as to result in a residual stress profile providing an effective degree of fatigue life improvement in a workpiece. The flat, chamfer, and curved portions may be present in any desirable sequence and number. In some embodiments, one or more of these features may be non-existent. For example, broken lines 4204 illustrate the use of a chambered shoulder in the absence of a central flat 4200. Various features may

optionally and preferably are connected with a blend curve, and in one embodiment, by a radiused curve such as curve portion 4220.

**Please replace the paragraph beginning at page `81, line 18, with the following rewritten paragraph:**

The drill centering features just described may be conical, or in the form of a truncated cone, as easily seen in FIGS. 145 through 150. First, FIGS. 145 through 148 illustrate the use of two different styles of a drill aligning feature in an indenter. FIG. 145 and illustrates the setup step for two indenter end styles, wherein each of the indenter end styles includes a centering feature to create a drill aligning indentation in a workpiece 5000. Indenters I145Aand I145C show the use of a conical drill aligning feature 5010. Indenters I145B and I145D both show the use of a truncated cone drill aligning feature [~~520~~]5020.